

ID#278,From:5255,

To: [REDACTED]

18SEP00,11:35,Page001of007

Re: [REDACTED] - Troubleshooting the Laser including:

Checking the interlock switches,

Testing the Input Power,

Testing the Laser Power Supply,

and Troubleshooting the Laser.

Tools needed: Phillips screw driver

Volt Meter

1.) Verify first [REDACTED] from the line cords are
fully inserted [REDACTED] the circuit breaker (under the
key switch) is [REDACTED] popped out the machine was
not working because the over current protection shut things down.
Third make sure the key switch is ON (in the horizontal
position). Fourth, make sure that the shutter is open. Last turn
on the battery at the power switch. The exhaust blower, [REDACTED]

To : [REDACTED] at [REDACTED] running pre-Tel. #: [REDACTED] but the door is

Ext. #:

From : Outside Caller

2.) This fax has 7 page(s) including this cover sheet.

With the battery power switch off and the door open press the
black buttons on the left and the right. There should be an
easily discernible click. If not, the cover should be removed
(per the instructions in the owner's manual) and the metal [REDACTED]
the non-closing switch bent up slightly. If this does not work
the problem contact Epilog for further instructions on adjusting
the interlock switches.



EPILOG LASER

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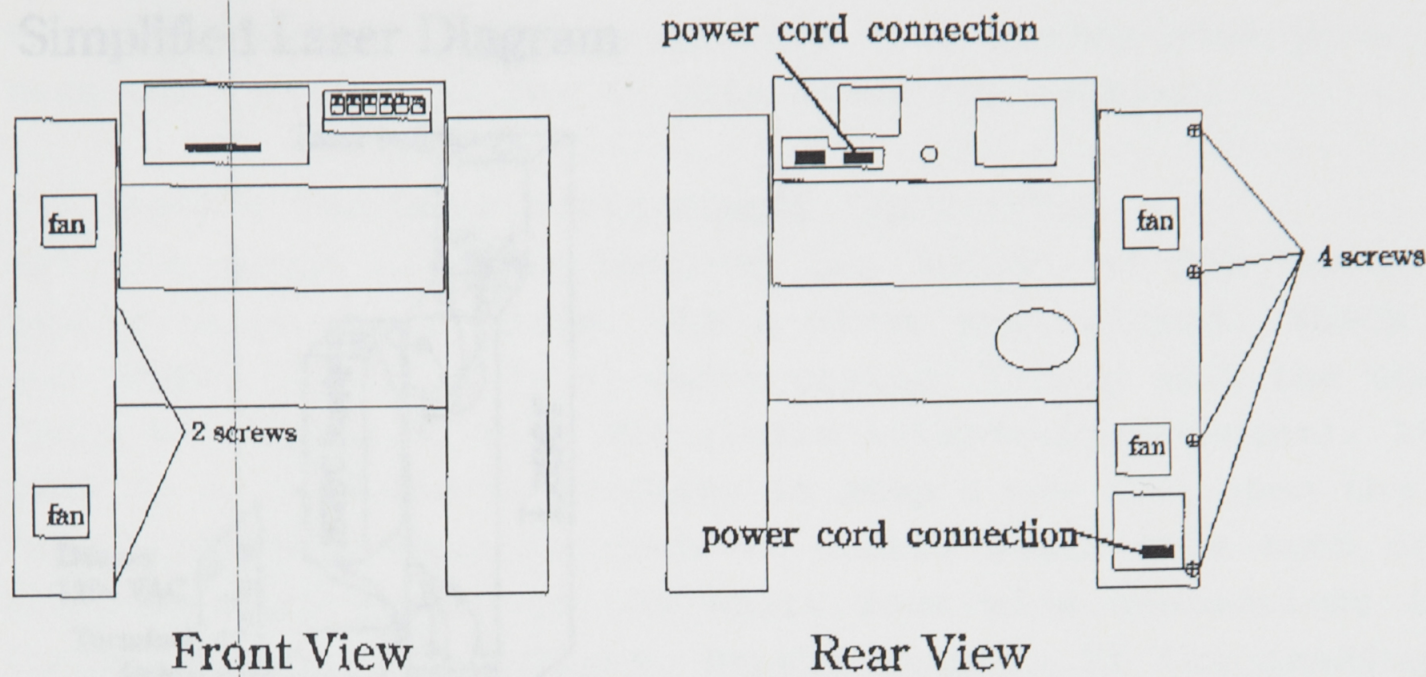
PROCEDURE: Troubleshooting the Laser including:
Testing the interlock switches,
Testing the Input Power,
Testing the Laser Power Supply,
and Monitoring the Laser.

Tools needed: Phillips screw driver
Volt Meter

1.) Verify first that the power plugs from the line cords are fully inserted. Second make sure the circuit breaker (under the key switch) is pressed IN. If it has popped out the machine was not working because the over current protection shut things down. Third make sure the key switch is ON (in the horizontal position). Fourth, make sure that the shutter is open. Last turn on the Eclipse at its power switch. The exhaust blower, interior light and all 4 fans should be running provided that the door is closed.

2.) Testing the Micro Switches

With the Eclipse power switch off and the door open press the black buttons on the left and the right. There should be an easily discernible click. If not, the cover should be removed (per the instructions in the owner's manual) and the metal arm on the non-closing switch bent up slightly. If this does not solve the problem contact Epilog for further instructions on adjusting the interlock switches.



3.) Removing the Cover for Laser Testing

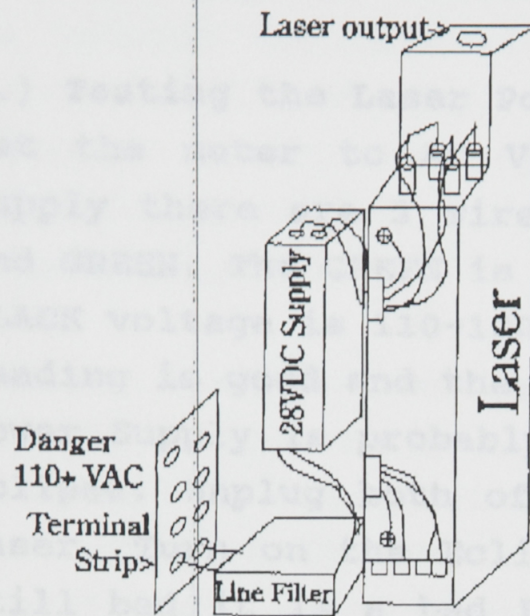
To test the laser it is necessary to remove the left leg side cover. To remove the left leg side cover you need first to remove the 2 front fan covers. These snap into place and can easily be levered off. Next remove the 2 Phillips head screws on the inside front edge and the 4 on the back of the machine. Lift off the left cover.

Set the meter on a Phillips head screw to the case that is on the left side of the machine. Turn further down. Set the meter to DC Volts. Touch the red meter probe (+) to one of the RED wires and the black meter probe (-) to the ground wire at the Phillips head screw. The proper reading is 26.5-29.5 VDC. If this is 26.5-29.5 VDC then go to step 7.

5.) Testing the Laser Power Supply Output (28 VDC Supply)

The Laser Power Supply is the aluminum box to the left of the laser assembly. On the top of this supply are 2 power terminals, one BLACK and one RED. Touch the red meter probe (+) to the RED power terminal and the black meter probe (-) to the BLACK power terminal. If this is 26.5-29.5 VDC then a connection is bad because step 4 did not yield a good reading. Look at the 2 white 4 wire connectors that enter the laser assembly. Make sure that

Simplified Laser Diagram



Inside View Left Leg

4.) Testing the Laser Power Supply at the Laser

To run the following tests the door should be closed and the engraver should be turned on. Located 4 inches down from the top of the laser there are 4 wire terminals. These terminals have color coded wires that are RED RED GREEN and BLACK. There is a fifth ground wire on a Phillips head screw to the case that is GROUND located 1 inch further down. Set the meter to DC Volts. Touch the RED meter probe (+) to one of the RED wires and the black meter probe (-) to the ground wire at the Phillips head screw. The proper reading is 26.5-29.5 VDC. If this is 26.5-29.5 VDC then go to step 7.

5.) Testing the Laser Power Supply Output (28 VDC Supply)

The Laser Power Supply is the aluminum box to the left of the laser assembly. On the top of this supply are 2 power terminals, one BLACK and one RED. Touch the RED meter probe (+) to the RED power terminal and the black meter probe (-) to the BLACK power terminal. If this is 26.5-29.5 VDC then a connection is bad because step 4 did not yield a good reading. Look at the 2 white 4 wire connectors that mate to the laser assembly. Make sure that

these are fully mated. Repeat step 4 to verify good power. Then test the engraver to see if this fixed the problem.

6.) Testing the Laser Power Supply Input Power

Set the meter to AC Volts. On the bottom of the Laser Power Supply there are 3 wires. The 3 wires are colored BLACK BLACK and GREEN. The GREEN is an earth ground. Verify that the BLACK to BLACK voltage is 110-120 VAC (Volts Alternating Current). If this reading is good and the reading in step 5 was bad, then the Laser Power Supply is probably bad. To double check this turn off the Eclipse. Unplug both of the white four wire connections to the laser. Turn on the Eclipse. Repeat step 5. If the readings are still bad it is a bad Laser Power Supply. Contact Epilog for a replacement laser power supply. If the readings are good (26.5-29.5 VDC) with the Laser unplugged then there is probably a fault in the Laser Assembly. Contact Epilog Technical support for verification and a new Laser Assembly.

7.) Monitoring the Laser

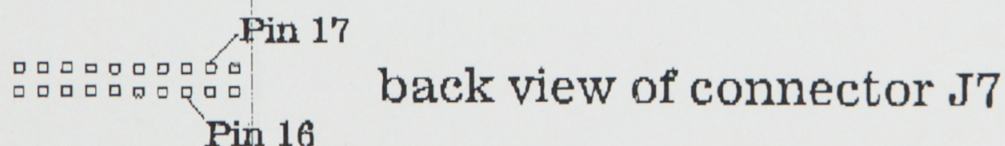
At the 4 terminals 4 inches below the top of the Laser the GREEN wire to BLACK wire is a 5 VOLT DC laser on control signal. This is only ON when the Laser is engraving. An open interlock will disable this signal. On a meter this signal can look lower and still be good. It is 0 Volts with the laser off. Make sure the shutter is open. To test the laser on control signal clip a DC Volt Meter positive (red lead) to the GREEN wire terminal and negative (black lead) to the BLACK wire terminal and engrave a test pattern. A good test pattern is a large black filled box. This gives you plenty of time to get the meter probes onto the right wires if you don't have clips. A big black box will also generate a good 5 VDC reading whereas another test pattern will generate a fluctuating signal.

RESULTS: If the meter reads 3-5 VDC and the Laser does not fire then something is wrong in the Laser Assembly. Contact Epilog Technical support for verification and a new Laser Assembly. If

the meter reads 0.0 VDC or close to zero instead of 5 VDC then a couple of things could be wrong. The right interlock switch must be engaged for this signal to work. This signal comes from the controller board. Therefore one of these 2 items is probably the culprit. Verify once again that the right button under the door produces an audible click. This implies that the controller board is probably bad.

Testing the Laser On Signal at the Controller Board

8.) The laser ON signal comes from the controller board. This is the vertical electronics board in the machine. Look along the top left edge of the controller card. There is a 20 pin connector containing a dozen wires. Under the connector is printed J7. The BLACK and GREEN wires are the Laser On Signal. The same signal tested at the laser in step 7. The GREEN wire is pin 15. With the Volt meter set to DC Volts. Verify that the controller board has voltage on the GREEN wire by testing it on the back of the board. Hold the BLACK meter probe against the power supply case (this is a good ground) and touch the red meter to the correct pin as shown in the figure.



RESULTS: If the voltage is stays low while the machine is engraving the test pattern, with the interlock switches pressed then the controller board is not working properly. Contact Epilog for a replacement.

If the voltage is good (2.4 - 5.0 VDC) then there is a wiring problem. Turn off the engraver. Set the meter to OHMS. Verify that there is continuity from J7 pin 17 to the GREEN wire at the top of the laser assembly. Verify that there is good continuity from J7 pin 16 to the BLACK wire at the top of the laser assembly.

9.) TESTING EACH HALF OF THE LASER

The laser is a two stage device. To get full power out of the laser both halves need to be functioning. Each half of the laser is powered over the white connectors with the red, red black and green wires. DO NOT PLUG OR UNPLUG THESE WIRES WITH POWER ON. Turn off power and unplug one half of the laser at the top connector. Please pull on the connectors. Do not pull on the wires. Engrave a test piece at slow speed. It should mark the test piece at half power, thus verifying that the bottom half of the laser is working. Now power off the engraver. Plug in the top half of the laser, and unplug the bottom connector. Engrave a test piece, thus verifying that the top half of the laser is working. If only one of these tests works contact Epilog for a replacement laser.

As always technical support is available by phone.